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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,576

07/19/2005

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EXAMINER

ROJAS, DANIEL E

ART UNIT

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4125

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,576	Applicant(s) HORI, SHINICHI	
	Examiner DANIEL ROJAS	Art Unit 4125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/7/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-9, 12, 13, and 18-20 is/are rejected.
- 7) ☒ Claim(s) 4, 6, 10, 11 and 14-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/13/2007, 6/29/2007, 3/22/2007, 2/7/2006,</u> | 6) <input type="checkbox"/> Other: _____ |
| <u>7/19/2005</u> | |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
2. The disclosure is objected to because of the following informalities: in the section entitled "Brief Description of the Drawings," Figure 24 should be labeled as prior art. Appropriate correction is required.
3. The disclosure is objected to because of the following informalities: the section entitled "Brief Description of the Drawings" gives a description of Figures 17 (a) and (b), 18 (a) and (b), 19 (a) and (b), 20 (a) and (b) which are not shown in the drawings.
Appropriate correction is required.

Drawings

4. Figure 24 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Also, figures 17 (a) and b), 18 (a) and (b), 19 (a) and (b), 20 (a) and (b) are not shown in the drawings but described in the specification. Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claim 19 is objected to because of the following informalities: "said negative resistance are comprised of" should be rewritten to "said negative resistance is comprised of". Appropriate correction is required.
6. Claim 20 is objected to because of the following informalities: " A filtering circuit including a combination circuit comprised of the voltage-current converting circuit" should read "A filtering circuit including a combination circuit comprised of a voltage-current converting circuit." Appropriate correction is required.
7. It should be noted that the applicant(s) are required to review all pending claims for such similar errors.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 1, 4, 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 defines a resistor circuit and claims 4-6, which depend on claim 1, state "each of said resistor circuits." Since only one resistor circuit has been defined, "each of said resistor circuits" is considered indefinite. Claim 1 also defines a resistance device comprising a negative resistance device. However, claim 6 defines a second circuit being comprised of a negative resistance

device. It is unclear if the negative resistance device of claim 1 is the same negative resistance device of claim 6. For the purposes of examination, the examiner is making the assumption that the negative resistances described in the two claims relate to the same negative resistance device.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3, 5, 7-9, 12-13 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Klemmer (US Patent No. 6,100,758). All element numbers referenced in this action will correspond to Figure 4 of Klemmer's patent.

12. For claim 1, Klemmer teaches (in Figure 4 of his patent) an active device (38) having an input terminal (gates of Q'₃ and Q'₄), an output terminal (drains of Q'₃ and Q'₄), and a grounded terminal (sources of Q'₃ and Q'₄) and carrying out a voltage-current conversion (inherent by the structure of Figure 4); and a resistor circuit (32') electrically connected in series to said active device through said ground terminal (as shown in Figure 4) and controlling a conversion gain of said active device (inherent by the structure of Figure 4), said resistor circuit having a variable resistance (as described below), and including a negative resistance device (cross-coupled transistors Q1 and Q2). Subcircuit 32' comprises a variable resistance since the resistance value changes according to the operational state of transistors Q'₁ and Q'₂.

13. For claim 2, Klemmer's invention comprises an active device (38') which is comprised of a pair of active devices (Q'_3 and Q'_4) each operating differentially with each other (as shown in Figure 4), and each having an input terminal (gates of Q'_3 and Q'_4), an output terminal (drains of Q'_3 and Q'_4), and a grounded terminal (sources of Q'_3 and Q'_4) and carrying out a voltage-current conversion (inherent by the structure of Figure 4), said resistor circuit is comprised of a pair of resistor circuits each electrically connected in series to each of said active devices through said grounded terminal of each of said active devices (R_{M1} and R_{M2}), and each controlling a conversion gain of each of said active devices (as discussed below), each of said resistor circuit having a variable resistance (cross-coupled transistors Q'_1 and Q'_2), and including a negative resistance device (as discussed above). Klemmer's specification teaches that "the first and second transistors of the transconductance cell (Q'_1 and Q'_2) receive the signal from the signal source and develop a modified version of the signal as an output current signal at first and second output terminals, respectively" Therefore, the resistor circuit 32 controls the conversion gain of each of the said active devices.

14. For claim 3, the reference as applied above teaches all of the claimed limitations.

15. For claim 5, Klemmer's resistor circuit is comprised of a first circuit comprised of a resistance devices (R_{M1} and R_{M2}) and a negative resistance device (cross coupled transistors Q'_1 and Q'_2) electrically connected in series to each other, said first circuit being electrically connected in series to said active device (38').

16. For claim 7, Klemmer's said negative resistance device of said pair of resistance circuits is comprised of a pair of active devices (Q'_1 and Q'_2) electrically connected in

cross to each other and operating differentially with each other, and each receiving, as an input signal (V_{IN} , $V_{IN_}$), a node signal either at a connection node at which said active device and said resistor circuit are electrically connected to each other or at any connection node in said resistor circuit (as shown in Figure 4).

17. For claim 8, Klemmer's said negative resistance device is comprised of a field effect transistor or a bipolar transistor. Figure 3 in Klemmer's patent contains the said bipolar transistors and Figure 4 contains the said field effect transistors (NMOS are shown).

18. For claim 9, in Klemmer's invention, a resistance of said negative resistance device is controlled by controlling either a source voltage or an emitter voltage of said field effect transistor or bipolar transistor. This limitation is inherent in the structure shown in Figure 4.

19. For claim 12, the said negative resistance device of Klemmer's circuit comprises a pair of bipolar transistors operating differentially from each other, wherein the emitters of the bipolar transistors are connected to each other.

20. For claim 13, Klemmer's invention further comprises a voltage controller (I_{EE}) electrically connected to a connection node at which said active device and said resistor circuit are electrically connected to each other, for controlling a voltage of said connection node. The current source connected to ground influences the voltage at the said node and therefore controls it.

21. For claim 18, the reference as applied above teaches all of the claimed limitations.

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22. For claim 19, Klemmer's disclosure states that "while FIGS. 3 and 4 have been shown and described utilizing N-type devices, conversion of the topology such that P-type devices can be utilized is apparent" (column 7, lines 3-6).

Claim Rejections - 35 USC § 103

23. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

24. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Klemmer (6,100,758). Klemmer teaches the said voltage-current converting circuit as discussed above but fails to teach a capacity device and a pass band which is controlled by varying the gain of said voltage-current converting circuit. However, examiner takes official notice that amplifiers (such as Klemmer's invention) are very well known to be connected to filters in order to reduce noise. It is also notoriously old and well known in the art to use capacitors in filter circuits since they block DC signals and that the gain of an amplifier is directly proportional to the amount of noise at the output. Therefore, it would have been obvious to one of ordinary skill in the art to place a high-pass filter at the output of Klemmer's amplifier in order to reduce noise at the output.

Allowable Subject Matter

25. Claims 4, 6, 10, 11, and 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL ROJAS whose telephone number is (571)270-5070. The examiner can normally be reached on Monday-Friday 7:30-8 EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on 571-272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/D. R./
Examiner, Art Unit 4125

/Charles D. Garber/
Supervisory Patent Examiner, Art Unit 4125